AMENDMENTS TO THE CLAIMS

A detailed listing of all claims that are, or were, in the present application, irrespective of whether the claim(s) remains under examination in the application are presented below. The claims are presented in ascending order and each includes one status identifier. Those claims not cancelled or withdrawn but amended by the current amendment utilize the following notations for amendment: 1. deleted matter is shown by strikethrough for six or more characters and double brackets for five or less characters; and 2. added matter is shown by underlining.

1. (Currently Amended) A reset circuit for an integrating amplifier, including:

first comparator circuitry having a first input terminal, a second input terminal and a first output terminal;

a first conductive path adapted to couple the first input terminal to a feedback loop of an integrating amplifier between an integrator output of the integrating amplifier and an integrating capacitor along the feedback loop, whereby a comparator input voltage at the first input terminal is changed in a predetermined first direction and in proportion to an amplitude of an incoming current during integration of the incoming current;

a substantially stable first voltage source for biasing the second input terminal at a first threshold voltage level selected to determine one end of an operating range for integration, wherein the comparator input voltage, when in said range and when so changed during integration, approaches the first threshold voltage level; [[and]]

a second conductive path coupling the first output terminal to the feedback loop;

power control circuitry having a fifth input terminal coupled to the first output terminal, a third output terminal, and a fourth conductive path adapted to couple the third output terminal to an input of the integrating amplifier to provide power to the integrating amplifier, wherein the power control circuitry is adapted to generate a substantially stable high voltage during

integration, and to switch from the high voltage to a substantially stable low voltage in response to receiving the high voltage from the first comparator circuitry, thereby to shut off power to the integrating amplifier;

wherein the first comparator circuitry is adapted, in response to detecting movement of the comparator input voltage out of the operating range beyond the first threshold voltage level, to generate a predetermined first comparator output voltage level at the first output terminal and to apply the first comparator output voltage level to the feedback loop via the second conductive path, thereby to drive the comparator input voltage in a second direction opposite said first direction to a point within the operating range for further integration of the incoming current; [[and]]

wherein the first comparator circuitry further is adapted to stop the application of the first comparator output voltage level to the feedback loop, responsive to detecting movement of the comparator input voltage, during said application, in the second direction beyond the first threshold voltage level and into the operating range;

wherein the comparator input voltage, when in the operating range, is higher than the first threshold voltage level, and is reduced during integration of the incoming current;

wherein the substantially stable first comparator output voltage level is a high voltage selected to rapidly charge the integrating capacitor; and

wherein the first comparator circuitry is adapted to alternatively generate said high voltage and a substantially stable low voltage, wherein applying the first comparator output voltage to the feedback loop consists essentially of switching from the low voltage to the high voltage, and stopping the application to the feedback loop consists essentially of switching from the high voltage to the low voltage.

2. (Canceled)

3 – 9. (Cancel)

10. (Currently Amended) ~~The circuit of claim 6 further including:~~A reset circuit for an integrating amplifier, including:

first comparator circuitry having a first input terminal, a second input terminal and a first output terminal;

a first conductive path adapted to couple the first input terminal to a feedback loop of an integrating amplifier between an integrator output of the integrating amplifier and an integrating capacitor along the feedback loop, whereby a comparator input voltage at the first input terminal is changed in a predetermined first direction and in proportion to an amplitude of an incoming current during integration of the incoming current;

a substantially stable first voltage source for biasing the second input terminal at a first threshold voltage level selected to determine one end of an operating range for integration, wherein the comparator input voltage, when in said range and when so changed during integration, approaches the first threshold voltage level; and

a second conductive path coupling the first output terminal to the feedback loop;

limiting circuitry coupled to the second conductive path to prevent excess charging of the integrating capacitor;

wherein the first comparator circuitry is adapted, in response to detecting movement of the comparator input voltage out of the operating range beyond the first threshold voltage level, to generate a predetermined first comparator output voltage level at the first output terminal and to apply the first comparator output voltage level to the feedback loop via the second conductive path, thereby to drive the comparator input voltage in a second direction opposite said first direction to a point within the operating range for further integration of the incoming current;

wherein the first comparator circuitry further is adapted to stop the application of the first comparator output voltage level to the feedback loop, responsive to detecting movement of the comparator input voltage, during said application, in the second direction beyond the first threshold voltage level and into the operating range;

wherein the comparator input voltage, when in the operating range, is higher than the first threshold voltage level, and is reduced during integration of the incoming current; and

wherein the substantially stable first comparator output voltage level is a high voltage selected to rapidly charge the integrating capacitor.

11. (Previously Presented) The circuit of claim 10 wherein the limiting circuit includes a limiting capacitor coupled to be charged simultaneously with charging of the integrating capacitor, and a diode biased to a substantially stable limiting voltage level.

12 - 13. (Cancel)

14. (Currently Amended) ~~The circuit of claim 13~~A reset circuit for an integrating amplifier, including:

first comparator circuitry having a first input terminal, a second input terminal and a first output terminal;

a first conductive path adapted to couple the first input terminal to a feedback loop of an integrating amplifier between an integrator output of the integrating amplifier and an integrating capacitor along the feedback loop, whereby a comparator input voltage at the first input terminal

is changed in a predetermined first direction and in proportion to an amplitude of an incoming current during integration of the incoming current;

a substantially stable first voltage source for biasing the second input terminal at a first threshold voltage level selected to determine one end of an operating range for integration, wherein the comparator input voltage, when in said range and when so changed during integration, approaches the first threshold voltage level;

a second conductive path coupling the first output terminal to the feedback loop;

second comparator circuitry having a third input terminal, a fourth input terminal and a second output terminal, wherein the third input terminal is coupled to receive the comparator input voltage;

wherein the first comparator circuitry is adapted, in response to detecting movement of the comparator input voltage out of the operating range beyond the first threshold voltage level, to generate a predetermined first comparator output voltage level at the first output terminal and to apply the first comparator output voltage level to the feedback loop via the second conductive path, thereby to drive the comparator input voltage in a second direction opposite said first direction to a point within the operating range for further integration of the incoming current;

a substantially stable second voltage source for biasing the fourth input terminal at a second threshold voltage level selected to determine a second and opposite end of the operating range, wherein the comparator input voltage, when in the operating range and when driven in said opposite direction, moves toward the second threshold voltage level;

a third conductive path adapted to couple the second output terminal to the feedback loop;

wherein the second comparator circuitry is adapted, in response to detecting movement of the comparator input voltage in the second direction out of the operating range beyond the second threshold voltage level, to generate a predetermined second comparator output voltage

level at the second output terminal and to apply the second comparator output voltage level to the feedback loop via the third conductive path, thereby to drive the comparator input voltage in the first direction to a point within the operating range for further integration of the incoming current;

wherein the comparator input voltage, when in the operating range, is higher than the first threshold voltage level, and lower than the second threshold voltage level, and is reduced during integration of the incoming current;

wherein the first comparator circuitry is adapted to alternatively generate a substantially stable high voltage and a substantially stable low voltage at the first output terminal, and generating the first comparator output voltage level consists essentially of switching from the low voltage to the high voltage to rapidly charge the integrating capacitor;

wherein the first comparator circuitry further is adapted to stop the application of the first comparator output voltage level to the feedback loop, responsive to detecting movement of the comparator input voltage, during said application, in the second direction beyond the first threshold voltage level and into the operating range; and

wherein [[:]] the second comparator circuitry is adapted to alternatively generate a substantially stable high voltage and a substantially stable low voltage at the second output terminal, and generating the second comparator output level consists essentially of switching from the high voltage to the low voltage to rapidly discharge the integrating capacitor.

15. (Previously Presented) The circuit of claim 14 further including:

power control circuitry having a fifth input terminal coupled to the first output terminal, a third output terminal, and a fourth conductive path adapted to couple the third output terminal to an input of the integrating amplifier to provide power to the integrating amplifier.

wherein the power control circuitry is adapted to generate a substantially stable high voltage during integration, and to switch from the high voltage to a substantially stable low

voltage in response to receiving the high voltage from the first comparator circuitry, thereby to shut off power to the integrating amplifier.

16. (Previously Presented) The circuit of claim 15 wherein:

the power control circuit comprises an operational amplifier with a positive input terminal biased at a substantially stable voltage and a negative input terminal coupled to the first output terminal, and each of the first and second comparator circuitry comprises an operational amplifier with resistive feedback receiving the first comparator input voltage at a negative input terminal.

17-61. (Canceled)

62 – 97. (Cancel)